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MSS. and Magazine Correspondence should be forwarded to the Editor, "Amateur Radio," Law Court Chambers, 191 Queen St., Melbourne, C.I., on or before the 8th of each month.

Subscription rate in Australia is 12/- per annum, in advance (post paid) and A15/- in all other countries.

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All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK3WI: Sundays, 1100 hours EST, 7146 Kc. and 2200 hours EST 59 and 144 Mc. No frequency checks available from VK3WI. Intra-state working frequency, 7125 Kc.

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VK3WI: Sundays, 0930 hours WAST, on 7146 Kc. No frequency checks available.

VK3WI: Sundays, at 1000 hours EST, on 7146 Kc. and 146.5 Mc. No frequency checks are available.

Published by the Wireless Institute of Australia.

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EDITORIAL



THE SACRED FLAME

Each passing year brings its sorrows as the Great Reaper takes His harvest from amongst our friends, many also victims of World War II., leaving us only "silent keys" and cherished memories. Their names are not engraved on the Remembrance Day Trophy, but we will have them in our hearts when we call "CQ R.D. Contest" this August.

Throughout the ages great philosophers have symbolised the flame as a purifier, a purger of dross and uncleanliness, the "Flame of Life," "Light of the World," to the Greeks, the "Torch of Life," a gift from the Gods on Mt. Olympia to mortal man; to "Toc-H" Brethren, a light to keep alive in the hearts of men, to strive more nobly in service to the living.

By participating in the R.D. Contest we make our annual pilgrimage

to the Shrine of Remembrance wherein the tiny flame, a symbol of eternal life, burns with a pure unending light; for our lives do not end with death; they stream on, not merely in our offspring but more importantly in the influence they have had on the rest of life, our families, friends, acquaintances and casual contacts.

To we who remember, then, let us strive to enter this year's Contest with the "Flame of Remembrance" in our hearts, to contest with each other as in Grecian Olympia; but let it be a contest to perpetuate the ideals of give and take, unselfishness and love for which they gave their lives in sacrifice.

*"By your acts of grace,
So shall they live."*

PRESIDENT S.A. DIVISION.

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THE COMPLETE AMATEUR

PART TWO

BY TOM ATHEY,* A.I.R.E. (Aust.)

In the nine sections of Part 1, the author dealt with the building of a band-switched transmitter, using normal theory. There was nothing included in its make-up that was out of the ordinary run of transmitters used by the fraternity. All that the writer tried to convey to the newcomer is that when he starts building his rig, to try and make it as neat as possible. The circuitry was made as simple as possible so that very little skill would be needed—just to be able to read a schematic and use everyday tools.

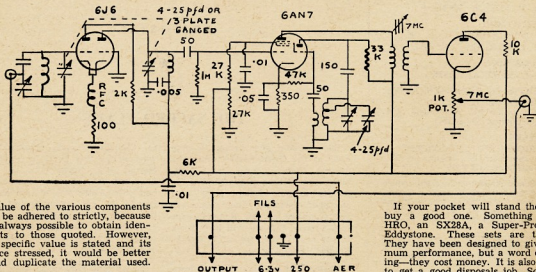
Since "Amateur Radio" has commenced to publish these articles, the writer has received letters from VK2, VK5 and VK6 asking him to continue the series and include (1) a good receiver, (2) a frequency meter, (3) notes on monitoring, and general tuning up.

So here is the answer to those enquiries. There will be five sections to Part 2, thus making 14 sections in all and giving, it is hoped, the newcomer to Amateur Radio a complete set-up of an Amateur Radio Station with details of how to start to build it. As stated

SECTION ONE

The Receiver

It is a well known fact that it is no use calling over and over your call sign if you can't hear a reply. Very often it is conditions that cause you not to get a reply, but not always. Very often it is your receiver that is responsible; it just has not got what it takes to get results. Therefore it is essential that you get a good receiver.



The value of the various components need not be adhered to strictly, because it is not always possible to obtain identical parts to those quoted. However, where a specific value is stated and its importance stressed, it would be better to try and duplicate the material used.

In country areas where A.C. power is not readily available, the use of genemotors can be substituted. Also valves can be replaced by a similar type, but drawing less current. For instance, use 6AM5s for the 6AG7s, 6V6s for 6L6s in the modulator, and use only one 807 in the final. This way your drain can be kept to a minimum. Yet you can obtain an input to the plate of the final of 50 watts quite easily.

before, it will be known as "The Complete Amateur." The five sections will comprise:—

- Receiver using converters for each band.
- Frequency meter with crystal calibrator.
- Modulation monitor using a simple "scope."
- Audio oscillator, Wein bridge type, 50-3000 cycles.
- Sundry tables on beam construction.

If your pocket will stand the strain, buy a good one. Something like an HRO, an SX28A, a Super-Pro, or an Eddystone. These sets are the top. They have been designed to give maximum performance, but a word of warning—they cost money. It is also possible to get a good disposals job. Something like a BC348. This is a fine receiver, but can be improved if you convert it to double conversion (see the 13th edition of the "Radio Handbook" for details).

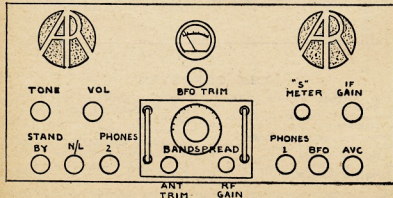
Still, the writer does not think that all Amateur requirements are fully handled by these commercial jobs. Either they do not cover all bands or they do not give enough bandwidth over the Amateur bands. So it is with this thought in view that the author decided to try and incorporate into this receiver everything that a Ham requires:

1. Ease of tuning.
2. 180 degrees of bandwidth on every band.
3. Double conversion (really triple).
4. AVC, BFO, noise limiter, S meter, two phone jacks, speaker output.
5. An "S9-er" input and a "Q5-er" output included.

The set is actually made up in two units, viz.: A converter (one for each band) and a sensitive, selective i.f. channel.

First we will discuss the converters. As you can see, this converter comprises a three-valve set-up. Converters can be from one valve upwards, but this set-up has been selected as the best for general coverage. It consists of a cathode-coupled grounded grid r.f. amplifier, followed by a conventional

* Ex-Instructor Q'land Division W.I.A. Classes; 41 Mountford St., New Farm, Brisbane.



conversion stage, converting the r.f. to approximately 7 Mc. This is then fed to the output terminal by a cathode follower. This method was chosen to allow a low-impedance output to the next unit. An aerial matching device is included to compensate for aerial differences.

DETAILED DESCRIPTION OF CONVERTER

The converter is built up on a chassis measuring approximately $4\frac{1}{2}$ " wide by 6" deep (front to back) and 3" high. Five terminal pins protrude from the rear of the chassis and engage five sockets mounted on the i.f. channel chassis (see sketch of i.f. chassis). These pins are for picking up the h.t. and i.t. supply. The fifth pin is for the aerial input.

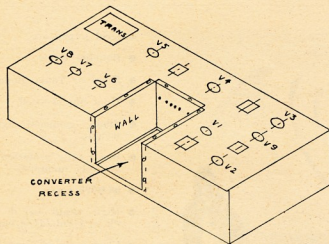
As an afterthought, it may be just as well to make the pins number six, as

similar coil as in the grid circuit and trimming it the same way. The grid is earthed, thus successfully acting as a shield between the plate and input circuit and so avoiding the necessity to neutralise this stage.

This input circuit has well known properties of being able to reduce input noise to a minimum at the same time giving r.f. gain. Hence my term an "S9-er" input. Values shown may be varied, but in the main should be adhered to if possible.

The output from the r.f. amplifier is fed to a conventional 6AN7 converter tube. This tube was selected because of its ability to readily oscillate up to 100 Mc. (claimed by the manufacturer) and as these converters may be built to use the bands up to 144 Mc., it may be just as well to standardise as to type of valve to use. Then if one passes out, you can always grab one from another converter, if you have not any spares.

Converters of this type can be made up as you require them. If you are a one-band man, you will of course only need one converter. But the time will come when you will want to try other bands, so instead of scrapping the existing job, all you have to do is to build up another converter, even whilst you are using the old one. The ultimate is, of course, one for each band—80, 40, 20, 15, 10, 6 and 2 metres—seven in all. The one i.f. channel will work them all and give you good results. Take pains in your work. A crackle finished panel looks good and very professional. If you have any difficulty in getting the panel cracked, try your local typewriter man and get him to do the job. The writer did and it did not cost very much. So much for the converter.



a positive earth between the converter and the i.f. chassis is a **must**.

The panel is made to overlap the chassis on both sides by half an inch and the height will be approximately 6". In making the chassis, bend $\frac{1}{4}$ " in at the bottom edge to allow for runners for the converter to slide on. On checking the pins over, you will find that one pin is over. This one is for the converter output. (See pins marked on schematic diagram of converter.)

Taking the circuit in detail, commencing at the aerial terminal or input. The aerial is fed at the junction of two condensers, one fixed and one variable. One end of this condenser network is earthed (the variable) and the other end goes to the r.f. coil. This coil can be either of the slugged type, or you can use the type made for a five-band coil kit. This coil is trimmed with a small capacitance so that you can peak up the output.

The r.f. coil in turn goes to the grid of the 6J6 valve. The output of this valve is cathode coupled to the next stage by a common cathode (common to both triodes). In the second portion of the valve (triode No. 2), output is taken from the plate circuit using a


The oscillator bandset condenser is screwdriver set to the band edge with the bandspread condenser fully in. Thus by opening the bandspread condenser out you can find out how much spread is needed and adjust the tap accordingly.

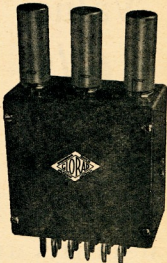
These converters use oscillator variation for band coverage and prove quite stable and satisfactory. The oscillator circuit used is one recommended by the manufacturer, but if you prefer another type of circuit, use it by all means.

The output of the converter valve is fed into an i.f. transformer having a frequency of approximately 7 Mc. There has been no special reason that 7 Mc. is the best frequency to use. You could use 10.7 or 3 Mc. if you wish, but whatever you do use, make sure that the i.f. channel will accept it.

The i.f. signal is fed to the 6C4 triode grid and the output is taken from the cathode of that valve.

The rest of the wiring is very straight forward and should present no difficulty to the builder. **Note:** Avoid long grid leads. Make good clean soldered joints, and see that the chassis is a good fit in the i.f. channel recess and that pins line-up exactly with the sockets.





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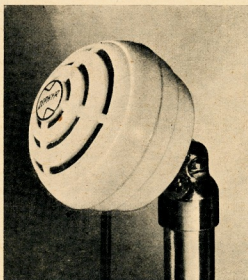
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"Sure Fire" Crystal Oscillator-Multiplier

BY J. V. HUTCHISON,* VK2JH

THE purpose of this article is to re-introduce an apparently little used "sure fire" crystal oscillator-multiplier circuit. After experimenting to some extent with this circuit, the writer came to the conclusion that it left the long known "third overtone regenerative" type of oscillator in the shade.

ADVANTAGES

Its main advantages over the latter are:—

- Any type of crystal capable of oscillating at all, will definitely "start" and keep going.
- For the same tubes and plate voltages, more output will be realised.
- Much more reliable for use in mobile equipment.
- The first multiplier section is capable of delivering more output on all harmonics, even up to the fifth harmonic of the crystal.

A capacitor, marked C3 in Fig. 1, couples the third harmonic voltage to the other triode section where it is tripled by a resonant plate circuit tuned to the ninth harmonic of the crystal. The latter is then coupled, via an r.f. transformer, to the cathode of a receiver mixer stage (i.e. cathode injection) which is preceded by a broad band r.f. stage resonated to the middle of the 50 Mc. band.

The 12 Mc. transformer from the mixer plate to the co-axial line is one of the four slug-tuned coils which were originally the crystal oscillator plate inductors used in the 522 transceiver. Two turns of insulated hook-up wire are wound over the cold end of the inductor and connected to the output co-ax socket.

The communications receiver, in this case, tunes from 10 to 14 Mc. in order to cover the 50-54 Mc. range.

However, our immediate concern is with regard to the possible application of the oscillator-multiplier circuit to transmitters, v.h.f. in particular.

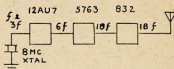


Fig. 3.

V.H.F. TRANSMITTERS

There appears to be a rather wide choice of tubes for this application, although some were found to deliver more output than others.

Two of the best types were found to be the 12AT7 and 12AU7. An RL16 gave excellent results as oscillator and 1st tripler also, but even the older types such as the 6N7 proved to be quite satisfactory.

A typical example of tube line-up for that 144 Mc. mobile rig would be as shown in Fig. 3.

Fig. 4 shows the correct circuit for the 12AU7 used as a crystal multiplier. If type 12AT7 is preferred, the inductance values should be increased slightly, in order to allow for the latter tube's different interelectrode characteristics.

AMATEUR BANDS AVAILABLE

| | |
|----------------|------------------|
| *1.84—1.86 Mc. | †288—296 Mc. |
| 3.5—3.8 " | *576—585 " |
| 7—7.15 " | 1,215—1,300 " |
| 14—14.35 " | 2,300—2,450 " |
| 21—21.45 " | 5,650—5,850 " |
| 26.96—27.23 " | 10,000—10,500 " |
| 28—30 " | †21,000—22,000 " |
| 50—54 " | †30,000 Mc. and |
| 144—148 " | Above. |

* Available for emergency network purposes only. Normal Amateur activities are not permitted in this band.

† Temporary allocations.

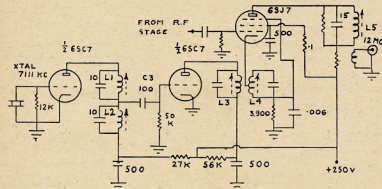


Fig. 1.

V.H.F. CRYSTAL CONTROLLED CONVERTERS

In an original version of the circuit, a 6SC7 dual triode served both as an oscillator, controlled by a 7.111 Kc. crystal and as a frequency multiplier as shown in Fig. 1.

The plate load of the oscillator section is two parallel resonant circuits in series, one tuned to the frequency of the crystal and the other to its third harmonic.

The above version could well be applied as a basis for the design of a crystal controlled converter for the 144 Mc. band.

A suggested line-up of tubes is given in Fig. 2. Other arrangements, with regard to tubes and receiver i.f. frequencies will suggest themselves to the reader.

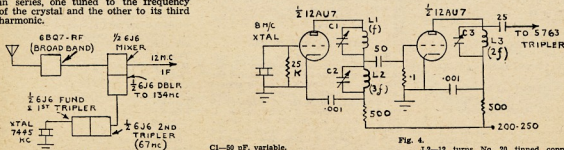


Fig. 2.

C1—50 pF. variable.

C2—25 pF. variable.

C3—25 pF. variable.

L1—32 turns No. 22

enamel, close wound on

1/4 inch former.

Fig. 4.

L2—12 turns No. 20 tinned copper, 1/4 inch diameter spaced to 1/4 inch.

L3—9 turns No. 20 tinned copper, 1/4 inch diameter, spaced to 1 inch.

TUBE TYPE DESIGNATION SYSTEMS*

Exceptions Prove the Rules in Numbering Radio Tubes

If, as the saying goes, "an exception proves the rule," then the rules governing the designation of radio tubes by numbers and letters are exceptionally well proved. For electronic tube numbers are like French verbs—more exceptions than rules. However, believe it or not, there is a system—several of them, in fact—and on occasion it helps to know what the various number and number-letter combinations mean.

Three standard systems now are recognized and used by most tube manufacturers. These are: (1) A receiving type system, (2) a cathode-ray system, and (3) an industrial and transmitting type system. These have been established as standard by a joint committee of two associations of manufacturers—the Radio, Electronics and Television Manufacturers' Association (RETMA) and the National Electrical Manufacturers' Association (NEMA).

Unfortunately, many tube types predate the systems now being used, and as a result we have several hundred cases in currently used tubes where the numbers do not follow the aforementioned systems. Also, some manufacturers still use numbering systems of their own instead of conforming to the voluntary standards set up by the joint committee mentioned above.

A brief review of the current numbering systems and some of those used in the past may help Amateurs who, when they browse through a tube manual, get the feeling they are wandering about in an unexplored jungle.

RECEIVING TUBE TYPES

Back in the 1920s, each manufacturer numbered or otherwise named his tubes as he saw fit and things very soon got very messy. The replacement problem was headed toward becoming unsurmountable, and so in 1933 the industry adopted the first voluntary standard numbering system—which although it has been since modified several times—still is used today for receiving tubes. This system calls for a number, a letter, and another number. An example, is our old friend, the 6L6.

The first number symbol determines the filament voltage within a certain range, to wit:

| Rated Filament or Heater Voltage | Symbol |
|---|--------|
| Zero | 0 |
| In excess of 0 and up to and including 1.6 | 1 |
| In excess of 1.6 and up to and including 2.6 | 2 |
| In excess of 2.6 and up to and including 3.6 | 3 |
| In excess of 3.6 and up to and including 4.6 | 4 |
| In excess of $n-0.4$ and up to and including $n+0.6$ where n is any integer | n |

The letter or letters in the middle are merely serial designations—with two letters being used when manufacturers ran out of single letters. Today the letters I, O and P are never used—and also, double combinations such as "AA" are never used.

The final symbol in this system consists of one or more digits which indicate the number of useful elements for which terminals are provided. This includes separate internal shield and shell connections. A few spot checks with the standard base diagrams (which are used in the A.R.E.L. Handbook and G.E.'s tube manuals) will show how this final symbol works out.

Often a suffix is used in this receiving type system. These, and their meanings, are: G—glass with octal base; GT—same except with a 1 and 1/8-inch diameter tubular bulb (known as T-9 size); M—metal-coated glass with octal base; X—low-loss base; Y—intermediate-loss base; and W—military type tube. A second suffix—which may be A, B or C and so on—means a superseding version of the same type which, according to the rules of the game, can be plugged into the same socket and should give as good or better performance.

That is the currently accepted receiving tube type designation system. But there are many exceptions. Numbers like 41, 80 and 12A carry over from previous years. We find another type of exception in the so-called "loctal" tubes whose designations all begin with a "7"—such as the 7C5. Obviously this plan does not conform to the filament voltage code above. Other exceptions have come about because the original purpose of certain tubes was not for "receiving." That is, some tubes often are used now for receiving purposes, but were originally designed, and numbered, in accordance with some other system. Samples of this type of exception are the 9002 and quite a few tubes in the 5500 series.

CATHODE-RAY TUBES

Being the baby of the family, the cathode-ray tube had a system slapped on it before it was hardly dry behind the filaments. As it now stands, this system calls for a number symbol which tells the maximum diameter of diagonal of the face in inches, a letter which is merely a serial assignment, and a letter-number symbol which designates the type of phosphor used. For example, the 16RP4 has a diagonal of 16 inches and P4 phosphor coating inside the face. However, there are a few exceptions—like the 905, 908, 1803 and so on.

TRANSMITTING TUBES

Under the inglorious heading of "tubes and devices exclusive of receiving and cathode-ray tubes" Amateurs will find their favorite transmitting "bottles" labelled with various and sundry letters and numbers which mean little, if anything.

The numbering of transmitting tubes was not standardised until 1942. Thus many tubes still being manufactured carry numbers and/or letters originally assigned under systems started by different manufacturers. For instance, the famous 807 and its brothers and sisters in the 800-series are carry-overs from private pre-war numbering systems. So are tubes in the 200- and 400-series.

In 1942 a standard number-letter-number system for transmitting and special purpose tubes was adopted—a plan which lasted only four years. However, a great many tubes still popular with Hams were assigned numbers under this system. Samples are the "Lighthouse" series like the 2C40 et al, the 4D32, 2E26 and others. Under this system, the first number symbol was assigned to indicate power rating of the heater or filament as follows:

| Filament or Heater Power | Symbol |
|---|--------|
| Zero | 1 |
| In excess of 0 watts and up to and including 10 watts | 2 |
| In excess of 10 watts and up to and including 20 watts | 3 |
| In excess of 20 watts and up to and including 50 watts | 4 |
| In excess of 50 watts and up to and including 100 watts | 5 |
| In excess of 100 watts and up to and including 200 watts | 6 |
| In excess of 200 watts and up to and including 500 watts | 7 |
| In excess of 500 watts and up to and including 1000 watts | 8 |
| In excess of 1000 watts | 9 |

Next, a letter symbol indicated the structure and/or function of the device in accordance with the following schedule:

| Type | Symbol |
|--------------------------------|--------|
| Monode | A |
| Diode | B |
| Triode | C |
| Tetrode | D |
| Pentode | E |
| Hexode | F |
| Heptode | G |
| Octode | H |
| Vacuum capacitors | L |
| Crystal diodes and rectifiers | N |
| Photo-emissive devices, etc. | P |
| Mercury types | R |
| Vacuum contactor-type switches | S |

* Reprinted from G.E. "Ham News," Vol. 8, No. 6, Nov.-Dec., 1953.

Finally, a number symbol constituted a serial designation, and these serial numbers started with 21 to avoid conflict with the receiving type designations.

In 1946 this system was scrapped in favour of a pure numerical serial system starting with 5500—the system which is in effect today. Thus many of the newer tubes used by Amateurs are appearing with numbers in the 5500's and 5600's. Of course, as this "5500 system"—as it is often called—officially includes special purpose devices, Hams will find a great many industrial tubes mixed in with the newer transmitting types of interest in Ham operations.

Neither of the two systems outlined—nor any of the private numbering systems—was made retroactive. Thus some tubes now bear complex numbers relating to more than one system. This gets a little bulky, but does tell the story. Witness the GL-4D21/4-125A. Here the "GL" denotes a General Electric company tube and the "4D21" and the "4-125A" explain how the tube has been listed under two different numbering systems.

GERMANIUM PRODUCTS

Under the long-hair title "solid state devices" we find one very old friend of the Amateur—the crystal diode—and one very new friend—the transistor. While at this writing the numbering system for such devices has not been officially promulgated by the joint designation committee of RETMA and NEMA, there is a system in use—a system which stems from the 1942-1946 transmitting tube system outlined above.

When crystal diodes began to be numbered—such as the 1N51 et al—the first symbol (the number "1") was in accordance with the 1942-1946 code and indicated zero power filament or heater. The second symbol, the "N," indicated a crystal device. The last number was merely a serial designation.

Then the transistor came along and began to carry numbers beginning with "2N—" (G-E junction-type transistors, for instance, are designated 2N43, 2N44, and 2N45).

Some manufacturers now want to code "solid state devices" by a system which in effect would pick up the pieces of several broken-down systems. They feel that it should go like this: The first number symbol would indicate the number of elements minus one—thus a 1N51 is a diode, a 2N45 a triode and so on; the "N" would indicate a "solid state device"; and the last number would be a serial designation. However, such a coding system has not been officially adopted.

As long as this is a free country, no manufacturer ever will be bound to adhere to a standard tube numbering system. He can call his tubes anything he likes.

However, most manufacturers today do their best to ease the replacement problem by going along with the decisions of the majority on a voluntary basis.

This question sometimes arises: Just who decides precisely what number shall be assigned to a particular tube type under any of the currently effective designation systems?

The answer is that RETMA registers all tubes upon request of manufacturers, assigning the next open number in the system in question.

★ ★

Now on the basis of the above rules and exceptions could you make up your mind whether or not to use, say an 862A in your next rig? Chances are you can't—and the chances are, further, that you won't bother to try when you find out that although this bottle has a 200-gallon input rating (and should run cool on the Ham band!), it lists at \$1322.00.

REMEMBRANCE DAY CONTEST VARIATION OF AWARDS

Following a motion to Federal Council and consultation with the Federal Contest Committee, the following variation of awards under Rule 17 will operate in the coming Remembrance Day Contest.

Instead of the three awards being given to first, second and third, in each State, these three awards will be given to the winners of the Phone, C.W. and Open Sections respectively.

It is felt that c.w. operators are at a disadvantage compared to those working phone or both phone and c.w. as they are so much in the minority and the change will encourage c.w. operators who would otherwise have little chance of gaining a certificate.

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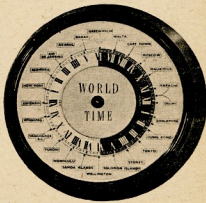
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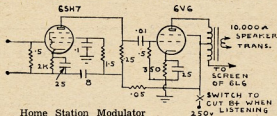
A NEW MODULATOR FOR THE TYPE 3

BY E. A. BARBIER,* VK5MD

HAVING tried various Modulators for the Type 3 and never being very satisfied with the results obtained, the author was talking to his old friend, Bob Manuel, VK5RT, who suggested straight out screen modulation, pointing out at the same time that this system was successfully used by cars of the Electricity Trust in S.A.

A modulator was quickly built up using a 6SH7 into a 6V6 with a centre tap 10,000 ohm speaker transformer as the modulation transformer. Results were excellent and the fact that one could modulate the 30-watt carrier was very pleasing to the writer.

No other power supply was used, the drain of the modulator and the trans-



Home Station Modulator

The original suggestion was single choke Heising, which, instead of modulating the plate as in the old days, modulated the screen of the 6L6 in the final. This involved a resistor to drop the screen to 125 volts and a capacity in parallel to shape the audio. Here we came back to one of the drawbacks, that the unmodulated carrier was only half that of the full input.

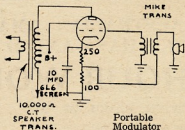
Browsing through a contemporary magazine by VK2JU, the author noticed a modulator using a 6V6 with centre tap choke modulator for modulating the plates of two 7193s. Why not use this system for modulating the screen of the 6L6?

*C/o. H.M. Gaol, Adelaide, South Australia.

mitter measured 91 Ma., which the experts assure is well within the limits of the Selenium rectifiers.

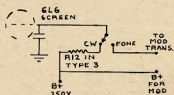
Herewith are the two circuits, one for portable work with a carbon mike and the other for home-station use using a crystal microphone.

The only adjustment needed to the rig is to tune up the transmitter in the c.w. position to maximum output as measured by r.f. meter lamp or what have you, then switch to the phone position, tighten the coupling until modulation causes an upward swing in the r.f. meter, lamp, etc., and a slight kick on the plate meter.



Portable Modulator

The switching system for the screen was that used in the series screen modulator described some years back and in case you have forgotten, it is given here:—



As a modulator for the newcomer, the author cannot think of anything simpler, and certainly much cheaper than buying an expensive plate modulation transformer, providing the new Ham has 250-300 volt supply for crystal and v.f.o., doubler stage and a larger supply for the final. VK5MR is using this scheme to modulate 80 watts to his final 807.

LONG WIRE ANTENNA

The editor asked a question the other day that reminded me of something perhaps a lot of Hams don't realise. You see, he recently moved to a spot where for the first time in his life he didn't have to bend the ends of a half wave 80 metre antenna. The switch apparently has awed him and he asked if we thought it would be worthwhile putting up a long wire on 80 metres.

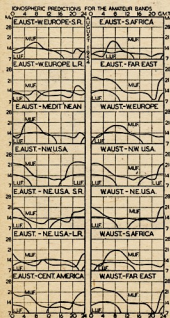
It seems his property is long but narrow. We were forced to advise him that unless he particularly wanted gain in that long direction (which he didn't) he ought not to go to any great pains to put up a long wire. And the reason is that a long wire gives you more losses than gains. In other words, relatively speaking, the nulls—broadside—of a long wire probably do more damage in general coverage work than the gain off the end does good. He's still wondering what to put up—and we didn't have the heart to suggest that probably his best bet would be a vertical (which he could have put up on any old lot).

—“Lighthouse Harry.”

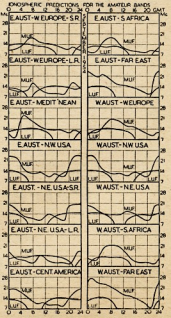
SHORT WAVE LISTENERS' GROUP

All persons interested in the formation of a Short Wave Listeners' Group within the Victorian Division of the Institute are invited to attend a meeting to be held in the rooms, 191 Queen St., Melbourne, on Tuesday, 31st August, at 8 p.m.

PREDICTION CHART FOR AUG., 1954



PREDICTION CHART FOR SEPT., 1954



AMATEUR CALL SIGNS FOR MONTH OF JUNE, 1954

ADDITIONS

VK—
27M—G. E. Meaton, 87 Duff St., Broken Hill South.
20Z—G. H. Elliott, 82 Stoney Creek Rd., Beverly Hills.
2FP—F. W. Twemlow, Station: Gordon Rd., Moorebank; Postal: 64 Princess St., Brighton-le-Sands.
2VS—V. V. Petruccini, 16 Glendale Rd., Turramurra.
2AAD—R. Hodgins, Ross St., Glenbrook, Blue Mountains.
2AAT—J. L. Hazelwood, Ridge Rd., Oakdale, via Camden.
2ADD—D. L. Dowling, Wattle St., Sawtell.
2AET—A. Hayvatt, 23 Archbold Rd., Roseville.
2AXU—A. G. Weynton, Cr. Elizabeth & Stanley Sts., Albury.
2ZAA—R. K. Dodd, 41 Richmond St., Tumut.
2ZAW—H. F. McTeigue, 65 Clansalpine St., Moesman.
2ZAW—G. D. Wheaton, 738 Anzac Pde., Kingsford.
3ER—E. V. Read, 41 Charteris Drive, Ivanhoe East, N.21.
3NR—N. C. Roberts, 7 Orford Ave., Kew, E.4.
3AGM—G. C. Muller, Roberts Rd., Belmont.
3AHP—B. D. Pronger, 5 Richmond St., Croydon.
3ZAA—G. S. Sutherland, 92 Fawcett St., Essendon, W.5.
3ZAB—S. G. Baxter, 10 Chenhall Cres., Traralgon.
3ZAC—W. L. Riis, 163 Derby St., Kew.
3ZAE—R. A. Elliott, 112 Bruce St., West Coburg, N.13.
3ZAN—R. Neal, 11 Xavier St., Nth. Essendon.
3ZAR—N. M. Robb, 8 Kent Rd., Box Hill, E.11.
3ZAW—M. J. Williams, 71 Shorts Rd., Merlynston.
4PM—C. W. Meech, R.A.A.F. Station, Amberley.
4ZAA—F. J. Pettiford, 7 Fraser St., Sandgate, N.E.2.
4ZAB—C. T. Amore, 46 Holland St., Northgate.
4ZAC—B. M. Byrne, 91 Main Ave., Rainworth, W.4.
South Australia
5FK—R. C. Fawkes, Beare Ave., Marleston.
SIC—P. R. Crosthwaite, 216 Prospect Rd., Prospect.

5JV—J. Vidale, 21 Haig St., Netherby.
SUF—R. Fenwick, Station: Royal Pals, Mildred St., Fort Augusta; Postal: C/o. SAU Broadcasting Co. Ltd., Box 247, Fort Augusta.
SUW—K. E. Wilson, Station: Station SAU Residence, Anstey St., Port Augusta; Postal: C/o. SAU Broadcasting Co. Ltd., Box 247, Fort Augusta.
SZAA—I. B. Wall, 38 Chatsworth Gr., Toorak Gardens.
SZAM—R. D. Martin, House No. 20, Radium Hill.
SZAW—N. C. White, 3 Derwent St., Cumberland Park.
Western Australia
6MN—D. A. McNaught, 98 Hobbs Ave., Collier, via Como.
6ZAA—W. J. Howse, 53 Ellen St., Fremantle.
6ZAZ—C. G. Andrews, 47 Canterbury Ter., East Victoria Park.
Territories
1GA—G. L. Abbe, Macquarie Island.

ALTERATIONS

VK—
2AN—8 Joycelyn Avenue, Chester Hill.
2BX—44 Princess Street, Brighton-Le-Sands.
2GO—Flat 8, 57 O'Sullivan Road, Rose Bay.
2L—C/o. O.T.C. Receiving Station, Bringley.
2MZ—Tree Tops, Bridge Road, Blandland.
2W1—Station: 271 Castlereagh St., Sydney; Postal: G.P.O., Box 174, Sydney.
2AQ—Let 8, Lascelles Road, Narraveena.
2AGQ—5 Providence Road, Ryde.
2AHR—C/o. Richmond District Fishermen's Co-op. Ltd., River Street, Ballina.
2AJX—"Syndavale," Princes St., Newport.
2ALF—Station: 14 Station St., Mullumbimby; Postal: Intermediate High School, Mullumbimby.
2ALK—Flat 2, 45 George Street, Marrickville.
2AOM—Flat 2, 29 Hughes Street, Elizabeth Bay.
2AOQ—99 Grafton Street, Bondi Junction.
2AQJ—No. 381T Squadron, R.A.A.F., Canberra.
2ATI—Newcastle Technical College, Wood St., Hamilton, N.1.
2AUP—99 Quigg Street, Lakemba.
2AVG—Station: 178 Golf Links Ave., Urunga; Postal: C/o. P.O. Belconnen.
2AYJ—Station: 75 Essex Street, Epping; Postal: C/o. Brolite Pty. Ltd., Cr. Ralph and Shirley Streets, Alexandria.
Victoria
3UF—Portable: C/o. Chief Signals Officer, H.Q. Southern Command, Melbourne.
3ABX—8 Cunningham Street, Renalla.

3ACE—Station: Morrison Street, Birchip; Postal: Cumming Avenue, Birchip.
3AFE—1215 Howitt Street, Wendouree, Ballarat.
3AJS—643 Hampton Street, Brighton, S.5.
3ARS—Falls Road, Trentham.
Queensland
4RP—21 Boveilles Street, Camp Hill, S.E.6.
4RS—Station: Main Street, Proserpine; Postal: C/o. G.P.O., Box 129, Proserpine.
47Y—State School, Wallangarra.
South Australia
5DH—129 Second Avenue, Royal Park.
5RZ—C/o. Station SAU, Fort Augusta.
5TV—18 Hanson Avenue, Heathpool.
Western Australia
6CD—37 River View Ter., Mt. Pleasant, Perth.
6CK—C/o. Dept. of Civil Aviation, Wyndham.
6FE—25 Heytesbury Road, Subiaco.
Tasmania
7DM—Station: C/o. D. M. Richardson, Stowport; Postal: C/o. J. R. Smith, 31 Hopkinson Street, South Burnie.
7RC—Station: Cambridge Airport; Postal: C/o. D.C.A., G.P.O., Box 541F, Hobart.

DELETIONS

FOR MONTH OF MAY, 1954
New South Wales: VKs 2CZ, 2AT, 2AH.
Victoria: VKs 3ED, 3GB, 3LQ, 3PZ, 3UQ, 3VG (now operating under VKVUG), 3XS, 3AOL (now operating under VK1BL), 3AYD, 3AYR.
Queensland: VKs 4TX, 4XD (now operating under VK2ND).
South Australia: VKs 5BF, 5EH, 5KS, 5OD, 5QM.
Western Australia: VKs 6NR, 6NY.
Tasmania: VK1GC (now operating under VK4IC).
FOR MONTH OF JUNE, 1954
New South Wales: VKs 2AN, 2ATJ.
Victoria: VKs 3BY, 3DT (now operating under 2VS), 3XU (now operating under 2AXU), 3AIC (now operating under 3RC), 3AMG (now operating under 4PM), 3ATD (now operating under 2AAD), 3ATE.
Queensland: VKs 4AD (now operating under 3AHP), 4HU.
South Australia: VK1JE.
Territories: VKs 8FK (now operating under 5FK), 9CM (now operating under 2JM), 1SK.

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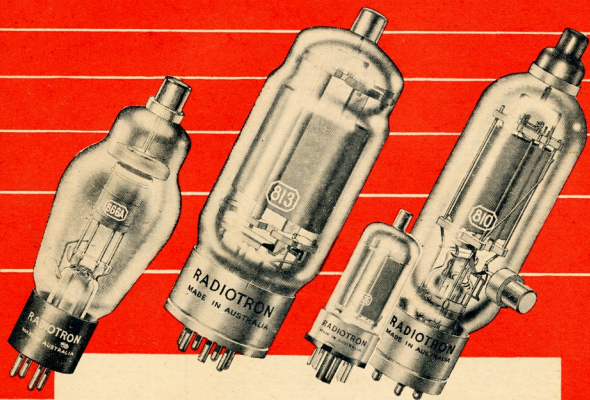
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The results of the Autumn Field Day held on 16th May are as follows: Section 1—Highest score by a field station, 20A, Mt. Gibraltar, 1462 points; Section 2—Highest score by a home station, 2WH, Forbes, 848 pts.; Section 3—Longest distance worked, 2ANF (Razorback) and 2WH (Forbes), 158 miles.

Remember! The 8th is not your posting date, but is the date of copy arriving in Melbourne.

The DX highlight of the month was the reporting of 3LN's Melbourne signals at Mt. Lofty. The signal is heard through from Melbourne to Adelaide and Len is looking forward to the next test. Len tests in the hope of a two-way contact with the 3LN. The distance between Melbourne and Melbourne is approx. 427 miles. It has also been reported that 3LN has been heard at Adelaide and a number of stations in the south now seems a possibility as the VK3s are being heard by 3CL at Nagambie (390 air-line miles) and 3CL is now being heard by 3LN. The power supply broke down when he turned over to transmit to them. It is significant that 3LN is heard by 3CL at Nagambie. The first contact was Sydney runs a 30 el. one and 3LN a 20 el. The VK3 boys at Mt. Lofty used a 16 el. log. large antenna. The antenna is made up of 3ATN, 3BQ and 3AKR. The height of the antenna seems important as 3ATN and 3LN are in the arroy up 80 ft. although 3LN is in the valley and 3ATN is on a hill. The signal is heard towards the south. 3ATN has had some patchy signals both ways from 2WH at Forbes, but

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VICTORIA

Page 13

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DC11 TYPE CRYSTAL HOLDERS WANTED. ANY QUANTITY.

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Prompt delivery on all Country and Interstate Orders. Satisfaction Guaranteed.

FEDERAL, QSL, and DIVISIONAL NOTES

FEDERAL

GLIDER AIRCRAFT RADIO IN 3.5 Mc. BAND

Representations have been made recently to the Amateur Administration with reference to the use by Glider Aircraft of the 3.5 Mc. frequency. The Federal Executive felt that this might prove a hazard to the aircraft, in view of the fact that this was the c.w. portion of our band.

The Department has pointed out that the Glider Service has operated this frequency for the past eight years without any serious possibility of interference is not considered serious enough to require transfer to another portion of the band.

It is also worthy of note that under Atlantic City (1947) Table of Frequency Allocations, the band 3.5 to 3.9 Mc. is assigned for Amateur, Fixed and Mobile Services. The Department has restricted the Fixed and Mobile Services to the 3.8 to 3.9 Mc. portion, leaving the 3.5 to 3.8 Mc. frequencies to the Amateur Services.

The 3.503 Mc. Glider Aircraft Frequency is the only exception to this, and the Department states that there is no intention, at this stage, of making further allocations for use by Fixed and Mobile Stations in the 2.5 to 3.5 Mc. portion of the band.

LISTENERS' GROUPS

With the lowering of age to 16 years for A.O.C.P., and the introduction of the "Limited" A.O.C.P., a new section of enthusiasts has been given the opportunity to enter our ranks. However, it must not be forgotten that there is a large group of people, both young and old, who, though not interested in the transmitting side of radio, are keen and critical listeners. These people, for the most part, have been unable to join in our activities in as full a measure as they might desire. It is with this in mind, that the Federal Executive has suggested that Divisions might find it expedient to form a "Listeners' Section," with particular facilities of its own.

A strong group of this nature could be of inestimable value in many ways to members of the Division, and would be a valuable ground for future transmitting members.

REPRINT OF HANDBOOK

It is confirmed that the Amateur Administration is arranging for a reprint of The Handbook for Operators of Amateur Wireless Stations. This will incorporate amendments already promulgated and those concerning the "Limited" A.O.C.P.

This booklet is recommended for study by candidates for examinations and the reprint will be at the earliest practicable date.

ADDRESS OF NEW FEDERAL SECRETARY

The private address of the new Federal Secretary, Doug. Bowie, VK3DU, is 22 Norfolk Road, Surrey Hills, E.10, and the phone number WF 5504.

AMENDMENT TO FEDERAL CONSTITUTION

Under the direction of the Federal Council of the Wireless Institute of Australia, Federal Executive hereby gives notice that it is intended to alter the Federal Constitution (1947) of the W.I.A. as follows:

Section 20. By deleting after the word "and" in the second (2nd) line, the words "two other members," and inserting in lieu thereof the words "four other members."

FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

Bill Storer, VK1EG, has at last been heard and worked by VK stations on both 7 and 14 Mc. c.w.

ZZDTB, St. Helena, was heard on 14 Mc. c.w. early in July. He is ZS8CW and will be on the island soon again.

All DX fans hope that long before this note appears in print, Alf VK3KJB will be in better health again.

CP1BX, Ted Westlake, is now T12BX. Ted visited Melbourne way back in 1947, for a Civil Aviation Conference.

Brian VK3KIB, has at last sent out some confirmations for work at Macquarie Island. Brian, who is presently at the P.O. Manly, N.W.A., must soon transfer to Fremantle, W.A. Vic., having received a nomination for promotion to the latter office.

Bill VK3KIB, Norfolk Island, a few months back and has arranged the printing of cards for VK3OK.

SILENT KEY

It is with deep regret that we record the passing of:—

VK5AW—Hal Austin, July, 1954.

Steve Barnes, KG6AEX, ex-KP6AA, well known to most VK stations, is leaving Guam after five years service in that location. He has been transferred to Anchorage, Alaska, and hopes to be active from KL7 by end of 1954. He sends his 73 to VK friends.

ZZCVSR, Vic Randall, who is a native of VK5, lived in Rabaul from 1928 to 1938. His QSL is a nice effort.

NEW SOUTH WALES

The June meeting of the N.S.W. Division was held at Science House, Gloucester St., Sydney, on 26th June. A large and attentive audience of members attended the meeting which was presided over by the President, J. Corbin, YXC.

After the preliminaries had been dispensed with the meeting was handed over to the lecturer of the evening, Mr. McCulloch, of Standard Telephones and Cables Ltd., who, in most accomplished manner, delivered a very absorbing lecture on Television, his impressions gained from a recent trip to the United Kingdom and America. The lecture was illustrated by slides and dealt with the varying systems in use in both countries, the advisability of using a.m. or f.m. and a discussion of the standards with regard to the various systems. From the Australian outlook Mr. McCulloch raised a few eyebrows in the course of his discussion when he dealt with the facilities of the t.v. service man and the large amount of equipment needed to carry out the oft-times necessary adjustments, and no doubt many who were listening (including your scribe) went home with very definite views on the matter, if not with a feeling of trepidation. The needs of the future were considered, both from the Australian point of view and also from the European angle, the question of the effects of interference, not from Amateur Radio, but from commercial and domestic appliances also, and the initial costs involved.

As can be imagined, question time was eagerly looked forward to by many, questions being fired at the lecturer some considerable time after he had concluded. All agreed that it had been a most informative night, and Mr. McCulloch is to be congratulated on his fine effort.

The recent Sunday morning broadcasts have not been very successful of late on 7 Mc. band, and it has again been found that at this time of the year that the broadcast has better coverage on 3.5 Mc. This has for the main part been attributed by Alan VK3ACC, using a 14 Mc. link from various stations, and it has long been felt that there is a need for a complete station for operation on 14 Mc. so that it is possible to appropriate points to enable that link to operate consistently to the convenience of the several operators who have personal interest in the venture carried this out. Council discussed the matter of building such a station and it was put to the meeting that this be done. The V.h.f. Section has been offered to design and construct the station and after discussion, the meeting decided to go ahead with the project and thus enable the Divisional broadcast to be heard in the near future throughout the State.

The meeting closed at 10.40 p.m. to be carried on by the hardy souls who invariably discuss the usual topics in the cold of Gloucester St.

HUNTER BRANCH

The June meeting of the Hunter Branch was held at the Tighes Hill Technical College on 11th June. 20 members were present and the meeting was presided over by Lionel ZCS. After the minutes and general business were disposed of, a film was shown entitled "The Story of the Federal Executive." This film was produced on a portable rx and the meeting heard a broadcast from a local h.c. station on Amateur frequencies, which was shown on Baker's Ignition and Electrical Systems which was well received. Lionel ZCS gave the final lecture for

the evening on "What you should know about your Antenna," a lecture which was both interesting and instructive.

A weekly hook-up has been in operation for some time on Monday night at 7.30 p.m. on 7140 Kc, and all Hunter Branch stations are invited to join the hook-up and have a ragchew with the rest of the boys.

Bill ZAMM appeared on the air again during the last month after an absence of 2 1/2 years, using a Type 3 receiver, H.L. to the 300 kc. gone back to "audio" again until 10 mc comes good again. Frank ZAHU is now operating 80, 40 and 20 mc. and is still at it, he has changed the bugs out of his tx. Les ZAOB is busily engaged converting an AT5 and hopes to have it on the air soon. Chas ZARV has a tape recorder and intends to get the playback ready soon. Fred ZAGY active on 144 Mc. nightly, working 21E in Sydney, uses a 5 over 5 beam to put the herbs over there. Ron has had more sickness of late, so his voice is not yet up to standard; his mother has returned from hospital and is making a fine recovery. Tom Steele, from Belmont, has now got himself a rx for his s.w. listening.

The next meeting of the Hunter Branch will be held at the Tighes Hill Technical College at 8 p.m. on 17/7/54, an interesting lecture and films have been arranged. All are welcome.

NORTH WESTERN ZONE

Little news from the zone this month, but it appears that Tom ZAMB has been quite busy finishing the construction of a trailer and has spent only a few hours on the air, this being on 7 Mc. and 20 mc. Don ZAPF has been the cobwebs off some Marconi gear and after getting 10 Ma. in the final found it does not work on 20 mc. Don ZAPF has decided to help or stand by for a test, consistently heard on 7 Mc. Sunday mornings. Bill ZACT appears to be finding gliding as interesting as keeping on or Amateur Radio. From ZAGM the news that distance and time involved in travelling have caused the membership of the Postal Radio Club to dwindle, the equipment has been dismantled temporarily. ZAGD has had rx trouble and found that 6v. tubes are not happy with 12v. supply, operates on 7 Mc., favorite likes are the key and DX.

SOUTH WESTERN ZONE

The 8th June proved to be a red letter day for the South Western Zone as no fewer than eight stations joined in the zone hook-up and ragchew, these being ZPT, ZRS, ZPT, ZBQ, ZAPZ, ZEUB and ZAOJ. Fine work chaps, and hope to see you all again on other nights. Don ZRS reports that Bert ZAZM, at Albany, has moved to a new QTH and is in the process of re-building his gear; hope to hear you soon. Bert, Lyn ZAGQ, at Coolman, has a unique way of getting down to earth, he has dunnied-in-the-pulley and also the top-off-the-pole.

Sunday, 13th June, a meeting was held at Tumut to arrange the 25th South Western Zone Convention, at Newbury, 25th Eric ZDQ (visiting Coolman from Wollongong), Ted Druitt and Jim ZAOJ together made the trip to Tumut, and the following day, ZAOJ and Stan ZEL. All arrived safely at the destination.

MY XYL SAYS!

WHY is it that a lot of Hams get so annoyed when the other fellow is lucky enough to snare, from under their noses, that elusive DX station.

My XYL says that if these same chaps were all fishing off the local jetty and one of their number caught a big fish, there would be no grumblings or mumblings, but only an enthusiastic congratulation from all present.

Of course my XYL is ignorant of the finer points of Amateur Radio and can be forgiven, if not silenced!

OIGLE.

Ray made a few alterations to Trev's 80 mx antenna, because since Ray's visit the feeders exhibit more standing waves than one would see on a U.S. Naval parade ground.

Byron's new three element on 20 mx is now all ready and adjusted for erection; above this beam will go a low angle beam for 5 mx which, when coupled to his new 100w. rig, should work out f.b. Herb 3JN, Yanac, is now on 2 mx and is using a 4 x 4. Mary 3AR, Morsham, has worked Ray 3ATN two-way at Birchop on 2 mx and Dick 3JR is consistently hearing Melbourne stations on 2 mx. they are fairly weak but nevertheless identifiable. He informed me the other night he was using 40 tubes in his 2 mx rx at the time, including converter, etc., so that should dig the weakest of signals out.

Well the time is wearing on and time is rapidly approaching for us to select a time and place for the next State Convention. Usually this is held during the latter half of September, so any views and ideas for a bigger and better convention than ever will be greatly appreciated.

QUEENSLAND

WANTED: An enthusiastic Amateur in the Queensland Division to take on the responsibility of Station Manager of VK4WI.

Duties are to receive, gather and correlate news of popular interest, items, talks and technical matter dealing with Amateur Radio and Amateurs generally in this Division. To outline the policy and activity of this Division to be presented for broadcast over VK4WI each and every Sunday.

Qualifications needed are, to have the welfare of this Division, the W.I.A. and Amateur Radio at heart, to be willing to give up a small portion of time each week in the production of the above mentioned articles. With energy and initiative to see these articles are on hand for the Sunday broadcast. This does not necessarily mean the successful applicant will have to house or maintain VK4WI or read the items, as Jack 4FP has promised to do both providing he gets the necessary help from members.

Remuneration is the satisfaction of having done something for the Division and the W.I.A. and kept his fellow Amateurs in touch with Divisional activity.

The reason for the above appeal is that too many Sundays have been missed over the past

few months, with no broadcast. This being a vital part of our activity and of too great an importance to just let go "willy nilly" as it has, owing to no one being willing to accept the position. So what say chaps, surely we have one in our ranks who would be happy to do the Institute a service in this capacity. Don't leave it to the only too few willing members, as in the past.

Seems as if, while we here in Brisbane are stagnating, the country boys are really getting down to it, as right on top of the news of the Rocky boys forming a club of their own, comes news of a group being formed in Townsville with Harold 4HM, our President at the inaugural meeting. News has it that the boys at Toowoomba are to form a group under the sponsorship of 4GG, called the Downs group. So it seems as if the country members are at least interested in the Division, and a little unity within our ranks, while we here in the city are laying down on the job.

To those interested enough to attend the general meetings, the lectures listed for the next few months are model planes and their remote control, a further lecture on D.M.E., the arts and hazards of deep sea fishing, and impedance matching antennae. Smith charts, slotted lines and what have you. All these lectures are by people who are well versed in the subject of their lectures, and if it's only to hear the elucidation of these subjects, it would make your presence at our general meetings worthwhile to yourself.

Our June meeting started with some topical films, presented by Ernie 4GE, which I'm not going to comment on. It was your misfortune if you missed them and judging by the loudness of the applause of appreciation for Ernie's effort everyone really enjoyed the show. "Nuff said!"

Did notice Ron 4RL among those present, long time no see Ron, hope the housing problem is settled and we will see and hear more of you in the future.

The Field Day held on the Queen's Birthday week-end was to all intents and purposes a snap with only a couple of tv's and not many Hams in support. Seems as if we will have to go further afield and get the support of the country Hams in future activities of this kind. We would certainly like to hear if this would suit them, they could do the organising their end, while we here try to rouse up enough enthusiasm to meet you on your own ground. With a few more groups, these field days could

be run in various districts throughout the year which, not only would give us a day's outing, but would give us a chance of meeting more of you and knitting the country and city members more closely together in our organisation.

Jim 4PR has built the crystal ear for 4WI with Jim 4OB doing the installation. John 4FP has promised the use of his car himself as chauffeur, this should put 4WI on the exact frequency while at the same time allowing us to give spot frequency broadcasts.

By what I've heard, 144 Mc. is getting a bit of prodding these days. Is this in preparation to give the holders of technicians' licenses one big welcome to the ranks of Amateur Radio? Did hear of one Ham giving the local air control a call thinking it was another Ham station.

Heard 4NR, who is a newcomer to this State, and 42M rattling on the respective merits of an 807 and how they use and abuse them in this and other States. Very enlightening what the poor old "toobe" has to suffer in the hands of the Ham.

Looks as if the Intrastate shield stays in the country as on the last count of logs in this contest, 4PQ has topped the score again with 4FT a close second, both putting up a very nice score. The best to date since this contest started a couple of years ago. Though a few more logs from the participants would be appreciated if only for check purposes. Maybe next year there will be more activity in it and give these two a run for their money.

From the Glympie area we hear that 4LY has his 14 Mc. beams down and QRL as he is shifting QTH, so means a new pole. 4CR is getting independent as he has one new halyard of copper wire. Only one more halyard to go. No more rope for Col. He is on 7 Mc. at times. Nothing heard of "Chips" 4XR lately; maybe a trial converter for 21 Mc. may come from the silence. 4EZ is gathering pieces—believe this means a grid 'dipper—we hope! Jim has had the tube for some time.

August is here again, so what about getting behind your State in the R.D. Contest as we can get that trophy with a little concerted effort on our part. The contest means the minimum of contacts and your log sheet in on time. The contest committee is relying on your efforts to pull it off this year. After all, we can always score more than the VK6 boys.

Well that's all for now, and a thought for the month. It is ridiculous for any man to criticise on the work of others who has not distinguished himself by his own performances.



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Approximate capacitance of the microphone is 750pF and cable capacitance will reduce output proportionately.

Frequency response
= 55 db ref. 1 volt/dyne/cm².
2 mchms included.

This microphone is supplied with approximately 4ft. (1.2 metres) of co-axial cable (type Unirad 32).
Microphone only 1.4oz. (approx. 170 grammes) complete with packing 7oz. (approx. 198 grammes).
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Ultimate trip temperature with rated current flowing equals 50/100 degrees C.

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